

Technical Bulletin

Wells Regulation – Well Maintenance

This technical bulletin is one in a series of 11 on well issues created for a person who is considering a new water supply well or who currently owns a water supply well. The purpose of this technical bulletin is to summarize the information on well maintenance found in the *Water Supply Wells – Requirements and Best Management Practices* manual published by the Ministry of the Environment, December 2009.

This technical bulletin describes maintenance requirements to prevent the entry of surface water and other foreign materials into a well and a well owner's responsibility to meet these requirements.

Well Owner's Obligations

Regulation 903 (Wells Regulation), as amended, made under the Ontario Water Resources Act requires that the well owner maintain the well at all times after the completion of the well's structural stage (i.e. once it is capable of being used for the purpose for which it was constructed), in a way that prevents the entry of surface water and other foreign materials into the well.

Considerations for Maintaining a Well

Proper maintenance by the well owner requires ongoing observation of the state of the well, the pumping and other equipment associated with the well and the surrounding area. The owner of the land is responsible for the maintenance of every well located on his/her property.

Maintenance Checklist

A well maintenance checklist for a well owner could include:

1. Documentation of the well location.
2. Visual inspection in and around the well annually, or more frequently. A good time to inspect the well is shortly after the snow melt or a heavy rain storm. If a well record is available, the construction, water levels and water quality information such as taste, odour, and colour on the record should be compared to what is observed when inspecting the well.
3. Verification that the well is not allowing the entry of surface water or other foreign materials by:
 - Making sure the well cap or cover is securely in place. The well cap should be removed to look for signs of moisture, spiders, spider webs, insects and other foreign materials attached to the inside of the well cap. If the well cap or cover is damaged or cracked and allowing foreign materials like insects to enter the well, it must be replaced with a manufactured vermin-proof cap or watertight well cover immediately (see the Safety Considerations when Maintaining Wells section below).
 - Confirming that the well cap or cover can withstand the weight of persons.
 - Looking at the air vent for cracks or holes, checking that the air vent is not plugged and ensuring that a screen is shielding the vent to prevent the entry of insects and other foreign materials into the well.
 - Looking for and removing any debris floating in the well. Debris floating on the surface of the well water (e.g. plant matter, insects or rodents) indicates that foreign material is entering the well through the casing, or the well cap or cover. Proper repair or abandonment of the well would then be required.
 - Looking for signs of corrosion or deterioration, cracks, holes or gaps on the casing. This could include moisture or water seepage, rust (iron) stains or black (manganese) stains at or below joints, waterline inlets, holes or cracks on the inside of the well casing. All holes, cracks and joints must be sealed to prevent the entry of surface water and other foreign materials. To prevent impairment of the well water, the sealing material should be approved for potable water use by NSF International..
 - Looking and listening for signs of surface water seeping or cascading down into the well along the well casing or just below the well casing.
 - Looking for pooling of water around the well. The ground surface must be appropriately sloped (mounded) to prevent surface water from pooling around the casing.
 - Looking for any ground settling around the outside of the well casing. This could mean the annular seal is compromised allowing surface water to seep into the well.

- Ensuring any space outside the casing and around waterlines is properly sealed with a suitable sealant, such as a bentonite slurry or other material as needed. All damage to the sealant from settlement or erosion must be repaired.
4. Identification and correction of any of the following situations that might result in contamination:
 - Directing downspout and underground storm water pipe discharge toward, near or into the well
 - Storing, using or disposing of refuse, manure, pesticides, fertilizers, petroleum products, salt, paint, animal waste or any other potential contaminants near the well
 - Locating animals or equipment near the well
 - Parking or storing vehicles such as cars, trucks, trailers, boats, snowmobiles near the well
 - Planting flowers, shrubs or trees around the wellhead as the roots can compromise the annular seal protecting the well
 5. Verification that the top of the well is accessible for future repair.
 6. Observation of any changes in the appearance or physical quality of the water, such as clarity, colour, taste or odour, especially after a rainstorm or snow melt.
 7. Verification that testing of the well water quality is done routinely to ensure the quality is acceptable; the results should be retained for future reference. The Ministry of Health and Long Term Care recommends that the owner sample the water in the well three times a year and have the samples tested for bacteria. Testing water samples is a free service offered through the local public health units.
 8. Verification that the sewage system, such as a septic tank system, works properly and has been properly maintained (pumped regularly).
 9. Identification of signs or abnormal sounds indicating wear on the pump, waterlines, electrical cables and associated equipment. In some cases electrical cables collect films, dirt or dust that may contain pathogens.
 10. Verification that the pump and the well are operating efficiently. If the pump is continually running or losing pressure, it may be a sign of a crack or hole in the waterlines. In other cases, iron bacteria and mineral encrustation can clog pump intakes, well screens and bedrock fractures and reduce water yields. Changes in water quality combined with a decrease in efficiency may indicate that system maintenance or rehabilitation is required.
 11. Verification that the terms and conditions of an existing approval are being complied with. For example, ensure the terms and conditions of a Permit To Take Water (PTTW) for a water taking from the well, if required, are being complied with and that the PTTW is valid and has not expired.

Maintaining Well Pits

Where existing well pits are in use, they should be regularly inspected and must be properly maintained just like a well. Many well pits are prone to collecting surface water and other foreign materials. Any surface water or other foreign materials that collect in a well pit can potentially get into the well through the top or sides of the well. If surface water or other foreign materials are entering a well pit, the well including the well pit must either be properly plugged and sealed or repaired to prevent the surface water and foreign materials from entering the well. For additional information on issues with well pits see Chapter 9: *Equipment Installation of the Water Supply Wells – Requirements and Best Management Practices* manual. The *Wells Regulation - Repairs and Other Alterations* technical bulletin contains information on extending casing for a well in a well pit.

Well Problems and Rehabilitation

Over time, the well water quantity or quality may deteriorate or the well structure may collapse. To prevent deterioration, rehabilitation of the well may be necessary. To assist well owners, Table 11-1 in Chapter 11: *Maintenance & Repair of the Water Supply Wells – Requirements and Best Management Practices* manual provides some common problems, possible causes and rehabilitation techniques associated with wells.

Safety Considerations when Maintaining Wells

There are many serious dangers associated with wells that must be considered when maintaining a well. Some precautionary actions to take include:

- The structure of the well should be assessed prior to approaching it. If the structure of the well appears unsound or the ground appears to be unstable, then a well owner should not approach the well.
- When inspecting a well, it is important to ensure that the power supply to the pump has been shut off to minimize the risk of shock or electrocution.
- Care must be taken anytime the well cover is removed to ensure that people and animals cannot fall into the well.

Do not enter any confined space unless properly trained and equipped. Confined spaces are non-ventilated areas including well pits, pump houses, and other areas defined in Ontario Regulation 632/05 as amended made under the *Occupational Health and Safety Act*. Confined spaces present asphyxiation hazards and some wells produce naturally occurring gases that are poisonous and/or explosive.

Work on wells should only be undertaken by experienced well technicians with the correct class of licence working for a licensed well contractor. Licensed well technicians must follow all health and safety requirements under the Occupational Health and Safety Act, including obtaining and following the guidelines set out in the Material Safety Data Sheet (MSDS) for any chemical product. The MSDS will include the following:

- Properties of the material,
- Hazards associated with the material,
- Personal Protective Equipment (PPE) required when using the material, and
- First aid and medical attention information.

Additional Information Sources

This technical bulletin on well issues is one in a series of 11 created for owners of water supply wells which are available on the ministry's web site:

http://www.ene.gov.on.ca/environment/en/subject/wells/STDPROD_075978.html

Further information on well maintenance for water supply wells can be found in Chapter 11: *Maintenance & Repair of the Water Supply Wells – Requirements and Best Management Practices* manual.

A copy of the *Water Supply Wells – Requirements and Best Management Practices* manual can be obtained from the ministry's web site:

http://www.ene.gov.on.ca/environment/en/resources/STD01_078655.html

For all of the requirements on non water supply wells (e.g. test holes or dewatering wells) see the Wells Regulation.

A copy of Regulation 903 (Wells Regulation), as amended, made under the Ontario Water Resources Act and other regulations can be obtained from the e-Laws web site at www.e-laws.gov.on.ca.

Publications are also available by calling the Publications Information Centre at 1-800-565-4923 or (416) 325-4000.

For further information about wells, contact the Wells Help Desk at 1-888-396-9355 (Well) or the nearest Ministry of the Environment office listed in the blue pages of the telephone directory.

Notice: This bulletin is being provided for information purposes only and is not intended, nor should it be construed as providing legal advice in any circumstances. The applicable legislation including the Ontario Water Resources Act and Regulation 903, as amended and made under that Act, should be consulted. Legislation and regulations change from time to time so it is essential that the most current versions be used.

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